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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,180	08/18/2005	Don W. Cochran	PSSZ 200074US	5253

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EXAMINER

LUU, THANH X

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/519,180

Applicant(s)

COCHRAN ET AL.

Examiner

Thanh X. Luu

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-15 is/are rejected.
- 7) ☒ Claim(s) 3,4 and 6-9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/20/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the series of annular regions alternating between diffuse, uniform illumination and light voids; the diffusers being front lit; a second location; and an inverse engineered illumination pattern must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because

only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because some of the figures are hand-drawn. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7, 9, 11 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 7, 9 and 11, "the objects under inspection" lacks proper antecedent basis.

Regarding claim 13, "the electronic image information" lacks proper antecedent

basis.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 5 and 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Cochran et al. (U.S. Patent 4,882,498).

Regarding claims 1, 2, 5 and 10-14, Cochran et al. disclose (see Figs.) a system and method for providing illuminated fields within an automated visual inspection system, comprising: a patterned illuminator (10) configured to provide spatially-adjacent regions of uniform, diffuse lighting and lighting voids to produce engineered illumination fields; a receiver aperture (lens of a camera 36) positioned to receive light generated by the patterned illuminator which has scattered or reflected off a part under inspection (20); and a transport mechanism (conveyor) used to automatically convey and position parts under inspection within the engineered illumination fields generated by the patterned illuminator. Cochran et al. also disclose (see Figs.) a camera (36) and a processor (50), LEDs (10) and pulsing (48) as claimed. As understood, the lighting and lighting voids are alternating in an on/off manner, and the pattern created is a series of

annular regions.

8. Claims 1, 2, 5 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al. (JP 08-254417).

Regarding claims 1, 2, 5 and 12-14, Kobayashi et al. disclose (see Figs.) a system and method for providing illuminated fields within an automated visual inspection system, comprising: a patterned illuminator (5) configured to provide spatially-adjacent regions of uniform, diffuse lighting (PR, PG, PB) and lighting voids (areas between PR, PG, PB) to produce engineered illumination fields; a receiver aperture (lens of a camera 6) positioned to receive light generated by the patterned illuminator which has scattered or reflected off a part under inspection (1); and a transport mechanism (conveyor) used to automatically convey and position parts under inspection within the engineered illumination fields generated by the patterned illuminator. Kobayashi et al. also disclose (see Figs.) a camera (6) and a processor (26) as claimed. As understood, the lighting and lighting voids are alternating in an on/off manner. In addition, Kobayashi et al. disclose (see Figs. 6 or 7) a series of annular regions and discrete light rings (11, 12, 13) as claimed.

9. Claims 1 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukuchi (U.S. Patent 5,004,909).

Regarding claims 1 and 12-14, Fukuchi discloses (see Figs. 1 and 2) a system and method for providing illuminated fields within an automated visual inspection system, comprising: a patterned illuminator (10, 10a, 10b) configured to provide spatially-adjacent regions of uniform, diffuse lighting (white) and lighting voids (black;

see Fig. 2) to produce engineered illumination fields; a receiver aperture (lens of camera 16) positioned to receive light generated by the patterned illuminator which has scattered or reflected off a part under inspection (12); and a transport mechanism (14, 32) used to automatically convey and position parts under inspection within the engineered illumination fields generated by the patterned illuminator. Fukuchi also discloses (see Fig. 1) a camera (16) and a processor (22, 20, 24) as claimed. As understood, the white and black alternating pattern is alternating in an on/off manner.

10. Claims 1 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kihira (U.S. Patent 5,691,811).

Regarding claims 1 and 12-14, Kihira discloses (see Fig. 2) a system and method for providing illuminated fields within an automated visual inspection system, comprising: a patterned illuminator (1, 2) configured to provide spatially-adjacent regions of uniform, diffuse lighting (white) and lighting voids (black) to produce engineered illumination fields; a receiver aperture (lens of a camera 4) positioned to receive light generated by the patterned illuminator which has scattered or reflected off a part under inspection (3); and a transport mechanism (conveyor) used to automatically convey and position parts under inspection within the engineered illumination fields generated by the patterned illuminator. Fukuchi also discloses (see Figs. 1 and 2) a camera (4) and a processor (5) as claimed. As understood, the white and black alternating pattern is alternating in an on/off manner.

11. Claim 14 is rejected under 35 U.S.C. 102(e) as being anticipated by Kim (U.S. Patent 6,542,236).

Regarding claim 14, Kim discloses (see Figs.) method of illuminating a part under inspection within an automated visual inspection system, comprising: positioning a part under inspection (34) at a selected location relative to a patterned illuminator (32) wherein illumination fields of the illuminator are selectively activated in an alternating on/off manner to produce an engineered illumination pattern; illuminating the part using the engineered illumination pattern; and analyzing light generated by the patterned illumination that has subsequently reflected or scattered off the part for the purpose of deducing quality status information related to the part.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim.

Regarding claim 15, Kim discloses the claimed invention as set forth above. Kim also discloses (see Figs. 8 and 9) providing an inverse engineered illumination pattern upon the surfaces of the part; illuminating the part with the inverse engineered illumination pattern as claimed. Kim does not disclose that the part is positioned at a second location. However, choosing to reposition the part is a matter of design choice and would require only routine skill in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to position the part at a second position in the method of Kim to provide more dedicated illumination as desired.

14. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. in view of Bourn et al. (U.S. Patent 6,554,452).

Regarding claim 10, Kobayashi et al. disclose the claimed invention as set forth above. Kobayashi et al. do not specifically disclose the type of ring light. Bourn et al. teach (see Figs.) providing a ring light constructed out of LEDs. Furthermore, it is known that LEDs are more efficient. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide LED ring lights in the apparatus of Kobayashi et al. in view of Bourn et al. to obtain a more efficient lighting system as known.

Regarding claim 11, Kobayashi et al. disclose the claimed invention as set forth above. Kobayashi et al. do not specifically disclose pulsing the LEDs as claimed. Bourn et al. teach (see col. 9, lines 8-11) pulsing (strobing) the LEDs to reduce blur. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide pulsing LEDs in the apparatus of Kobayashi et al. in view of Bourn et al. to improve detection by reducing blur as taught.

Allowable Subject Matter

15. Claims 3, 4 and 6-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

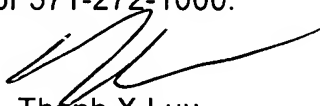
16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is 571-272-

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2441. The examiner can normally be reached on M-F 6:00AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Thanh X Luu
Primary Examiner
Art Unit 2878

08/2006